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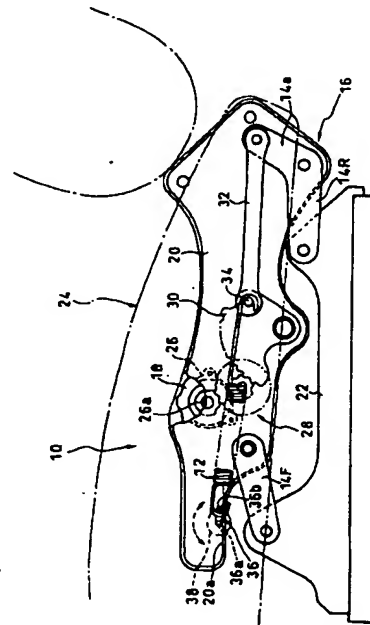
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【発明の名称】 シートリフターの操作力軽減機構

(57) 【要約】

【目的】 ヘルパースプリングによる操作力軽減の有効体重範囲の拡張を可能とする。

【構成】 クランクロッドとしてなる係止部材36が、そのクランク部36bを後方突出位置、および前方突出位置にその回転のもとでそれぞれ設定、保持可能に、サイドフレーム（アッパ部材）20の左右側部間に架設、軸支されている。そして、引張コイルばねからなるヘルパースプリング12が、リフターリンク14Rをその立ち上がり方向に偏倚可能に、このクランクロッドのクランク部36bと、ハンドル18に連動するセクタギヤ30の連結ピン34との間に架設、張設されている。



【発明の属する技術分野】

この発明は、駆動部材の上昇操作力の軽減をはかるシートリフターの操作力軽減機構に関する。

【発明が解決しようとする課題】

上述したように、シートリフターにおいては、着座者の体重が上昇操作の際の負荷となるため、その体重によって、上昇操作に課せられる操作力は変動する。しかし、公知の構成においては、ヘルパースプリングから付与される偏倚力が常に一定であるため、操作力の軽減可能な有効体重の範囲が、そのヘルパースプリングの持つ偏倚力に相応する範囲内に限定されやすい。

つまり、着座者の体重が著しく重い場合等においては、ヘルパースプリングによる操作力の軽減が十分に得られなくなることも否定できず、ヘルパースプリングを設ける構成であっても、駆動部材の操作性が十分に改善されなくなる可能性は多分に考えられる。

【特許請求の範囲】

【請求項1】 アッパ部材、ロア部材間に介在させたフロント、リヤ対のリフターリンクによって、シートを昇降可能に支持し、駆動部材による、少なくともいずれかのリフターリンクに対する回転操作のもとで、シートを任意の高さに調整、設定可能とするシートリフターにおいて、

クランクロッドとしてなる係止部材が、主軸部から突出したクランク部を後方突出位置、および前方突出位置にその回転のもとでそれぞれ設定、保持可能に、アッパ部材の左右側部間に架設、軸支されるとともに、引張コイルばねからなるヘルパースプリングが、リフターリンクをその立ち上がり方向に偏倚可能に、このクランクロッドのクランク部と、駆動部材に連動する連動部材の可動端との間に架設、張設されたことを特徴とするシートリフターの操作力軽減機構。

【請求項2】 アッパ部材の左右側部が、少なくともその下端縁に内方フランジを有して形成され、クランクロッドのクランク部をこの内方フランジに上方から係合可能とすることによって、クランク部の後方突出位置、前

方突出位置を、内方フランジとの係合位置にそれぞれ規定、設定可能とするとともに、駆動部材に連動する連動部材の可動端を、内方フランジへのクランク部の係合位置より下方に設定した請求項1記載のシートリフターの操作力軽減機構。

『書誌事項の続き』

【テーマコード（参考）】

3B087

【Fターム（参考）】

3B087 BA15 BB21 BC27

【図面の簡単な説明】

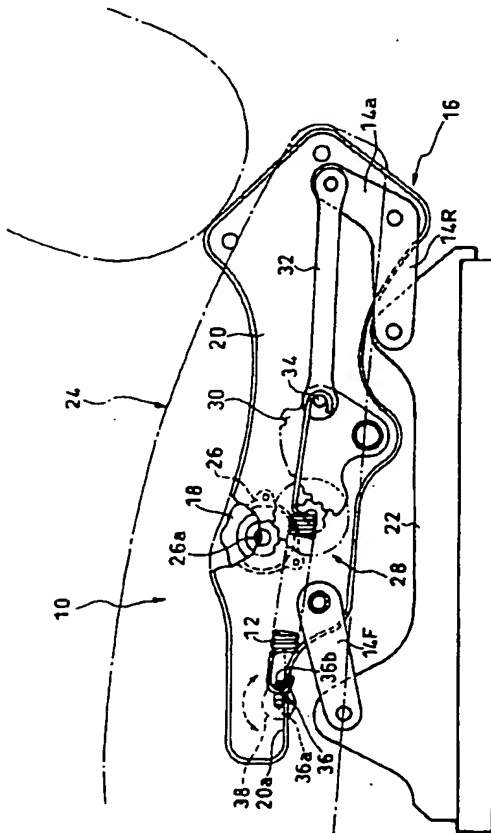
【図1】この発明に係るシートリフターの操作力軽減機構を示す、シートリフターの概略縦断面図である。

【図2】クランク部の後方突出位置、および前方突出位置における、シートリフターの操作力軽減機構の部分的な各横断面図である。

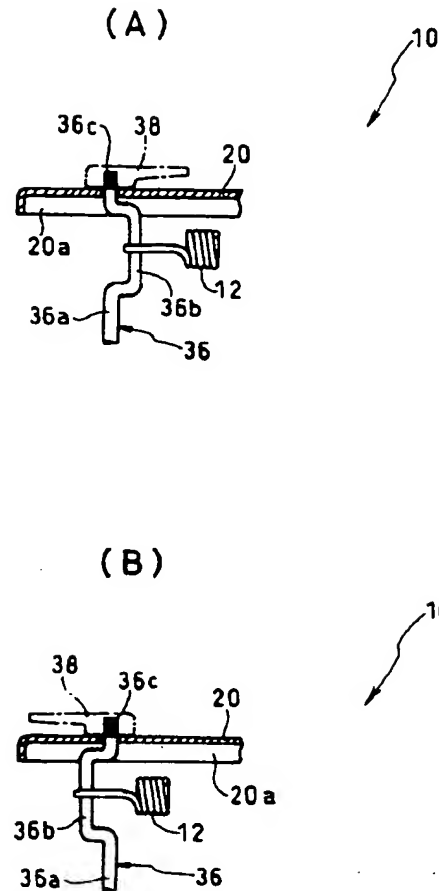
【符号の説明】

- 10 シートリフターの操作力軽減機構
- 12 ヘルパースプリング（引張コイルばね）
- 14 (14F, 14R) フロント、リヤのリフターリンク
- 16 シートリフター
- 34 連結ピン（連動部材）
- 36 クランクロッド（係止部材）
- 36b クランク部

【図1】



【図2】



PATENT ABSTRACTS OF JAPAN

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(71)Applicant : TACHI S CO LTD

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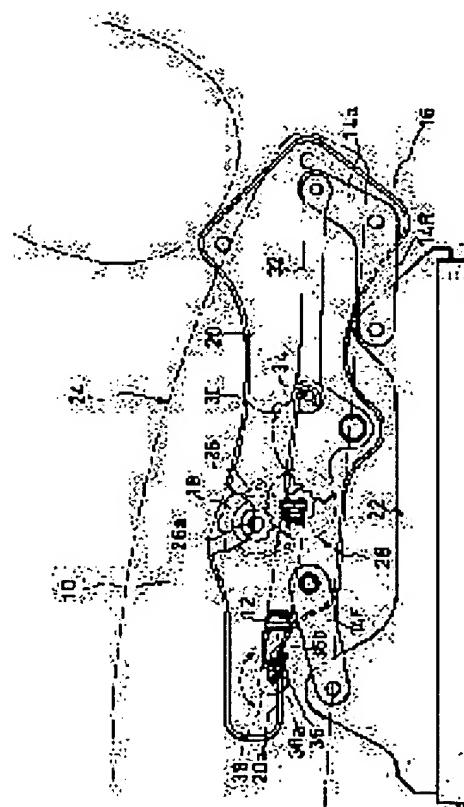
(72)Inventor : MINAE SHOZO

(54) OPERATING FORCE REDUCING MECHANISM FOR SEAT LIFTER

(57)Abstract:

PROBLEM TO BE SOLVED: To enlarge an effective body weight range for reducing operating force by a helper spring.

SOLUTION: A locking member 36 serving as a crank rod is extended and journaled between the lateral side parts of side frames (upper members) 20 so that the crank part 36b can be set and held in a backward projecting position and a forward projecting position respectively by the rotation of the crank rod. The helper spring 12 formed of a tension coil spring is tightly stretched between the crank part 36b of the crank rod and a connecting pin 34 of a sector gear 30 interlocked with a handle 18 so as to be able to offset a lifter link 14R in its rising direction.



LEGAL STATUS

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Bibliography

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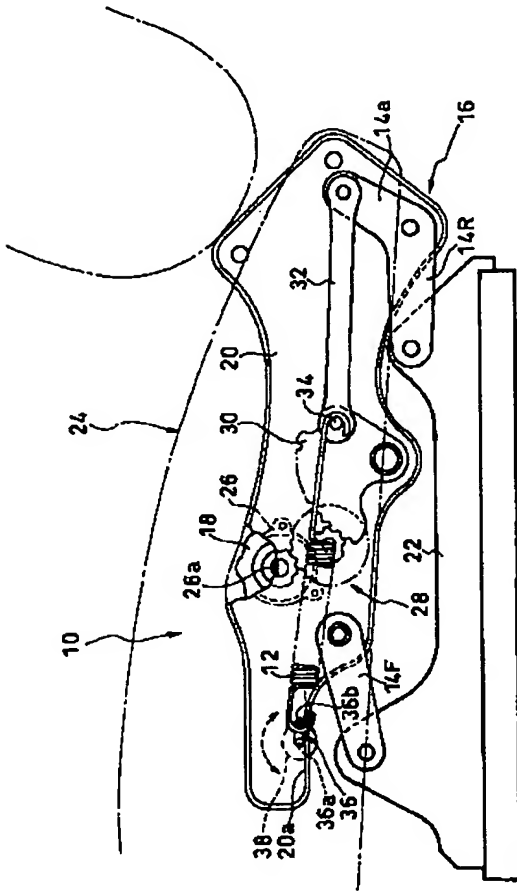
(57) [Abstract]

[Objects of the Invention] The escape of the effective weight range of the operating-physical-force relief by the helper spring is enabled.

[Elements of the Invention] The stop member 36 which becomes as a crank connecting rod is constructed and supported to revolve under the rotation by the back projection location and the front projection location respectively possible [setting out and maintenance] in the crank section 36b between the left right-hand side sections of a side frame (upper member) 20. And in lifter link 14R, in that direction of a standup, possible [a deflection], the helper

spring 12 which consists of a helical extension spring is constructed between crank section 36b of this crank connecting rod, and the connection pin 34 of the sector gear 30 interlocked with a handle 18, and is stretched.

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CLAIMS

[Claim(s)]

[Claim 1] By the lifter link of a front and a rear couple made to intervene between an upper member and the Roa member, support possible [rise and fall of a sheet] and under the rotation actuation by the driving member of as opposed to one of lifter links at least In the sheet lifter which enables the adjustment and setting out of a sheet in the height of arbitration While being constructed and supported to revolve under the rotation by a back projection location and the front projection location between the left right-hand side sections of an upper member respectively possible [setting out and maintenance], the stop member which becomes as a crank connecting rod the crank section which projected from the main shaft section The operating-physical-force relief device of the sheet lifter characterized by constructing and stretching the helper spring which consists of a helical extension spring possible [a deflection] in that direction of a standup in a lifter link between the crank section of this crank connecting rod, and the movable end of the interlocking member interlocked with a driving member.

[Claim 2] At least, the left right-hand side section of an upper member has an inner direction flange on that soffit edge, and is formed in it. The crank section of a crank connecting rod among these, by enabling the upper part to engagement to a direction flange While enabling convention and setting out of the back projection location of the crank section, and a front projection location respectively in an engagement location with an inner direction flange The operating-physical-force relief device of the sheet lifter according to claim 1 which set up caudad the movable end of the interlocking member interlocked with a driving member from the engagement location of the crank section to an inner direction flange.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the operating-physical-force relief device of the sheet lifter which aims at relief of the lifting operating physical force of a driving member.

[0002]

[Description of the Prior Art] In the height of a sheet, possible [adjustment and setting out], it has the lifter link of a front and a rear couple, and the sheet lifter with which sheets, such as an automobile, are equipped is formed in arbitration. And this sheet lifter is constituted under the splash of the lifter link interlocked with actuation actuation (rotation actuation) of the driving member which consists of a handle, a lever, etc. possible [rise and fall of a sheet].

[0003] Here, in this kind of sheet lifter, the sheet itself to which the taking-a-seat person sat down is the object of migration by the driving member, and since this load is great, in lifting actuation of a driving member, the great operating physical force (rotation force) which resists that load (a taking-a-seat person's weight) is required. Then, the configuration equipped with the so-called operating-physical-force relief device in which obtain reduction of the load from a sheet and relief of the lifting operating physical force of an operating member is obtained by reduction of a scale and this load is usually offered by deflecting a lifter link in that direction of a standup under the biased force of a helper spring.

[0004] As a helper spring, generally a helical extension spring is used, and is usually constructed and stretched between the ends of the sector gear which interlock and rotate the biased force to a stop member fixed possible [grant] and a driving member in the direction of a standup of a lifter link.

[0005]

[Problem(s) to be Solved by the Invention] Since it becomes a load at the time

of a taking-a-seat person's weight being lifting actuation in a sheet lifter as mentioned above, the operating physical force imposed on lifting actuation is changed with the weight. However, in a well-known configuration, since the biased force given from a helper spring is always fixed, it is easy to be limited within limits to which the range of the effective weight which can mitigate an operating physical force ****s in the biased force which the helper spring has.

[0006] That is, when a taking-a-seat person's weight is remarkable and heavy, it cannot be denied that relief of the operating physical force by the helper spring is no longer obtained fully, either, but even if it is the configuration of preparing a helper spring, possibility that the operability of a driving member will no longer be improved fully is much considered.

[0007] This invention aims at offer of the operating-physical-force relief device of the sheet lifter which enabled the escape of the effective weight range of the operating-physical-force relief by the helper spring.

[0008]

[Means for Solving the Problem] In order to attain this object, according to this invention, the stop member which becomes as a crank connecting rod is constructed and supported to revolve under that rotation by the back projection location and the front projection location between the left right-hand side sections of an upper member respectively possible [setting out and maintenance] in the crank section which projected from the main shaft section. And the helper spring which consists of a helical extension spring is constructed and stretched possible [a deflection] in that direction of a standup in the lifter link between the crank section of this crank connecting rod, and the movable end of the interlocking member interlocked with a driving member.

[0009]

[Embodiment of the Invention] Hereafter, the gestalt of implementation of this invention is explained to a detail, referring to a drawing.

[0010] As shown in drawing 1 , the operating-physical-force relief device 10 of the sheet lifter concerning this invention is equipped with the helper spring 12 which consists of a helical extension spring. And this operating-physical-force relief device 10 is constituted possible [relief of the lifting operating physical force of the driving member 18 in the sheet lifter 16] by giving the biased force of this helper spring 12 in the direction of a standup of the lifter links 14F and 14R.

[0011] The sheet lifter 16 is formed possible [rise and fall of a sheet 24] by making the lifter links 14F and 14R of a front and a rear couple intervene in between with the upper member 20, for example, the side frame of a seat

cushion, and the runner (for it to also be called an upper rail) 22 of the Roa member, for example, sheet slide equipment, enabling free rotation. And this sheet lifter is constituted possible [the adjustment and setting out to arbitration] in the height of a sheet 24 by equipping this sheet lifter 16 with the driving means 28 which uses as a driving member 18 the handle which fixed to driving shaft 26a of the brake means 26, and connecting the end of the sector gear 30 used as the output member of this driving means with movable piece 14a of lifter link 14R of RIYA possible [linkage] through the connection arm 32.

[0012] In addition, the configuration of this kind of sheet lifter 16 very thing is well-known, and since this configuration itself is not the meaning of this invention, it is not explained to a detail here.

[0013] Here, as shown in drawing 1 , this sheet lifter 16 is equipped with the operating-physical-force relief device 10 in which relief of the lifting operating physical force of a handle (driving member) 18, i.e., the rotation operating physical force to the lifting direction, is aimed at. This operating-physical-force relief device 10 is equipped with the helper spring 12 which consists of a helical extension spring. This helper spring The movable end 34 of the interlocking member interlocked with a handle 18 possible [grant of the biased force to the direction of a standup] at lifter link 14R with which the driving means 28 was connected, for example, the connection pin of sector gear 30, It is constructed and stretched between the stop members 36 arranged ahead [the] under erection between the side frames (upper member) 20 on either side.

[0014] And in this invention, it is formed as a crank connecting rod in which the stop member 36 has selectively at least crank section 36b which projected from main shaft section 36a, and the helper spring 12 is constructed and stretched between this crank section and the connection pin 34 of sector gear so that it may turn out that drawing 2 (A) is seen in addition to drawing 1 .

[0015] Here, this crank connecting rod (stop member) 36 is constituted respectively possible [setting out and maintenance] by the back projection location which shows crank section 36b to drawing 2 (A), and the front projection location which shows drawing 2 (B).

[0016] In the gestalt of implementation of this invention, crank section 36b of a crank connecting rod is formed in the location which can engage with way flange 20a among the soffit edges of a side frame 20, among these is the basis of the engagement from the upper part to a direction flange, it can specify and the back projection location and the front projection location of the crank section can set up, respectively.

[0017] In addition, in this configuration, maintenance of the crank section to a back projection location and a front projection location becomes securable under the biased force of a helper spring by setting up caudad the location of the connection pin 34 by which the other end of the helper spring 12 is stopped from the engagement location of crank section 36b to this inner direction flange 20a.

[0018] Moreover, as shown in drawing 2 (A), in the gestalt of implementation of this invention, the control lever 38 for carrying out rotation actuation of the crank connecting rod 18 is formed in extension edge 36c of a crank connecting rod rotatable in one with the crank connecting rod. that is, rotation actuation of crank section 36b between a back projection location and a front projection location was bordered on main shaft section 36a of a crank connecting rod -- reservation by reversal rotation of a control lever 38 by the side of the Johan section is almost attained.

[0019] In this configuration, the location of crank section 36b of a crank connecting rod is switched by reversal rotation actuation of a control lever 38 between the front projection locations shown in the back projection location shown in drawing 2 (A), and drawing 2 (B). And in the back projection location of crank section 36b, the distance between the connection pins 34 is short so that drawing 2 (A) and (B) may turn out to refer to drawing 1. Moreover, since that distance becomes long in the front projection location of the crank section, the strength of the biased force of the helper spring 12 which was constructed between the crank section and a connection pin and was stretched by the change of the back projection location of this crank section and a front projection location will be switched.

[0020] That is, in the operating-physical-force relief device 10 of the sheet lifter of this invention, a change and setting out of the strength of the biased force of the helper spring 12 are attained in two steps, and since [of the strength of that biased force] it will have the effective weight range of operating-physical-force relief, the effective weight range of operating-physical-force relief is extended certainly, respectively. and -- if the biased force of the helper spring 12 at the time of this weak setting out is set up as biased force equivalent to the former -- strong setting out of the biased force -- the time of an operation of a great quantity of loads -- getting it blocked -- since the reservation of relief of the lifting operating physical force at the time of taking a seat of a heavy taking-a-seat person with remarkable weight is enough attained, the operability of the sheet lifter 16 is improved certainly.

[0021] Moreover, in this invention, the stop member by which the end of the

helper spring 12 is stopped is used as the rotatable crankshaft 36, and the effective weight range of operating-physical-force relief can be extended, without causing complication of a configuration, since it is sufficient if the end of a helper spring is stopped to crank section 36b of this crankshaft.

[0022] Although it is the basis of the engagement to way flange 20a among side frames and the back projection location of crank section 36b and the front projection location are specified and set up in the gestalt of implementation of this invention here, it is good also as a configuration which is not limited to this, for example, enables setting out of the crank section in each location under engagement to the stopper of dedication etc. However, if way flange 20a is used for setting out of the back projection location of crank section 36b, and a front projection location among side frames, since it will become possible, without accompanying a convention of the crank section to each location, and setting out by the increment in components mark, complicated-ization of a configuration can prevent certainly.

[0023] Moreover, in the gestalt of implementation of this invention, the control lever 38 prepared in that extension edge 36c is materialized as a rotation actuation means of a crankshaft 36. However, since it is sufficient if rotation actuation of a crankshaft 36 is possible, it is good also as a configuration which is not limited to this, for example, prepares a crank-like actuation piece in main shaft section 36a in one.

[0024] Furthermore, in the gestalt of this operation, the terminal of the helper spring 12 is stopped at the connection pin 34 of sector gear. However, since it is sufficient for it if the member by which the terminal of the helper spring 12 is stopped is the movable end of the interlocking member interlocked with the handle which can be deflected in that direction of a standup in lifter link 14R of RIYA which the rotation operating physical force of a handle 18 is delivered, it is good also as a configuration which is not limited to the connection pin 34 of these sector gear, for example, stops the terminal of a helper spring to movable piece 14a of a rear link etc.

[0025] In addition, in the gestalt of implementation of this invention, although sheet lifters, such as an automobile, are materialized, it is not limited to an automobile, for example, this invention may be applied to the sheet lifter for [, such as an electric car, an airplane, and a marine vessel] other cars.

[0026] The gestalt of implementation of invention mentioned above is for explaining this invention, and it cannot be overemphasized that all the things that do not limit this invention at all and were given [modification / deformation,] by technical within the limits of this invention are also

included by this invention.

[0027]

[Effect of the Invention] As mentioned above, according to the operating-physical-force relief device of the sheet lifter of this invention, a change and setting out of the strength of the biased force of a helper spring are attained in two steps, and since [of the strength of that biased force] it will have the effective weight range of operating-physical-force relief, the effective weight range of operating-physical-force relief is extended certainly, respectively. And since the reservation of relief of the lifting operating physical force which can be set by setting up the biased force of a helper spring strongly at the time of an operation of a great quantity of loads is enough attained, the operability of a sheet lifter is improved certainly.

[0028] Moreover, the stop member by which the end of a helper spring is stopped is used as a rotatable crankshaft, and the effective weight range of operating-physical-force relief can be extended, without causing complication of a configuration, since it is sufficient if the end of a helper spring is stopped in the crank section of this crankshaft.

[0029] Furthermore, if the back projection location of the crank section and a front projection location are specified and set up under the engagement to a way flange among side frames, since it will become possible, without accompanying a convention of the crank section to each location, and setting out by the increment in components mark, complicated-ization of a configuration can prevent certainly.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is outline drawing of longitudinal section of a sheet lifter showing the operating-physical-force relief device of the sheet lifter concerning this invention.

[Drawing 2] It is each partial cross-sectional view of the operating-physical-force relief device of a sheet lifter in the back projection location and the front projection location of the crank section.

[Description of Notations]

10 Operating-Physical-Force Relief Device of Sheet Lifter

12 Helper Spring (Helical Extension Spring)

14 (14F, 14R) A front, lifter link of RIYA

16 Sheet Lifter

34 Connection Pin (Interlocking Member)

36 Crank Connecting Rod (Stop Member)

36b Crank section

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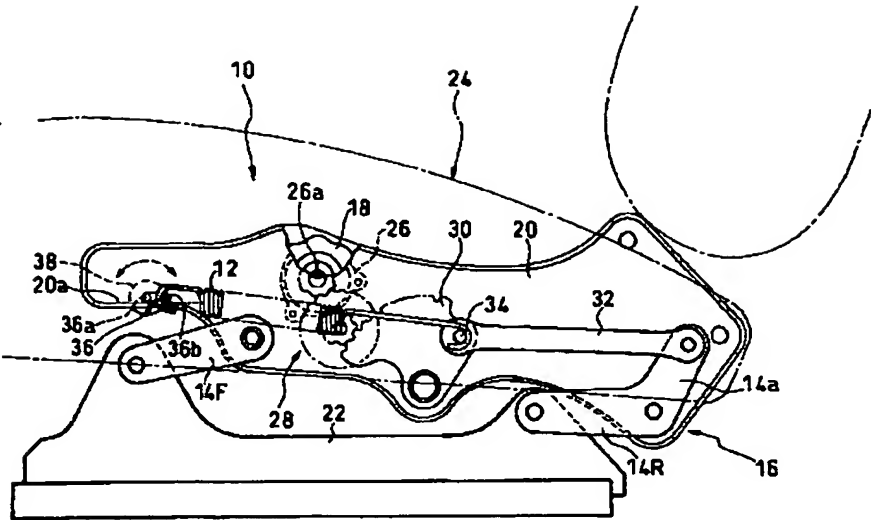
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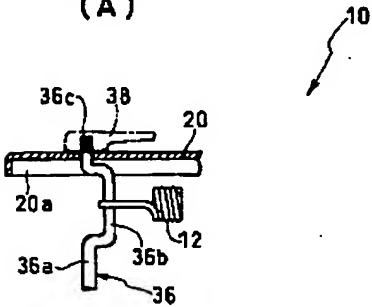
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DRAWINGS

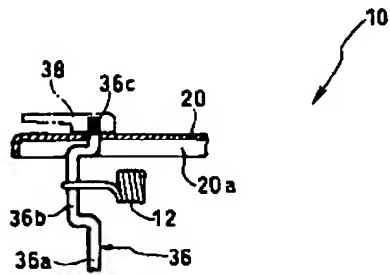
[Drawing 1]



[Drawing 2]
(A)



(B)



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